

IDENTIFICATION

Growth: Upright, semi-woody, hardy perennial with a dense bushy growth of 1 to 50 stems. The square-to-many-sided, green to red stems grow 3' to 9' feet tall and die back each fall. Old stems may persist for several years. Often found in clumps of several plants.

Flowers: Purple to pink and on numerous long spikes. Individual flowers are 1/2" to 3/4" across, with 5 or 6 petals.

Seeds: Tiny, smaller than a pin head. 2 to 3 million produced annually on each healthy, mature plant.

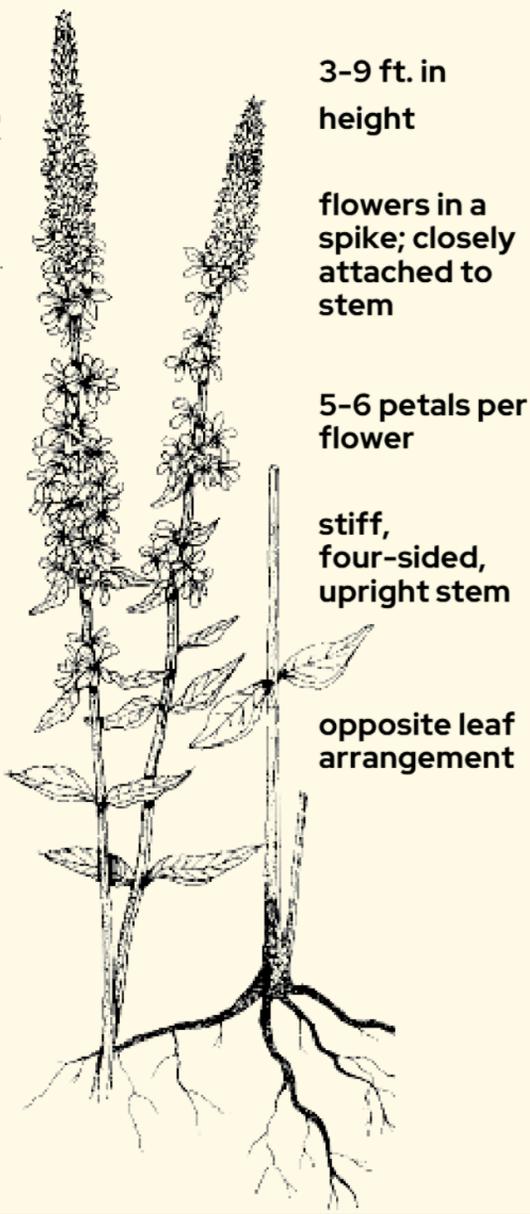
Leaves: Variable, usually opposite, but sometimes alternate or bunched in whorls. Linear shaped; smooth edged; sometimes hairy; attached directly (no stalks) to stems with each pair at 90 degrees to those above and below. No noticeable odor.

Root: Woody with many fibrous side roots forming a dense mat. Root masses may be several feet across in old clumps.

Blooming period: Late June through early September. Spike blooms from bottom up. Lower pods may drop seeds while upper blooms are still present.

Habitat: Moist-soil to shallow-water sites, such as wet meadows and pastures, marshes, stream and river banks, lake shores and ditches. Established plants tolerate dry conditions, such as gravel roadsides and abandoned fields. Still planted (illegally) in some gardens.

Distinguishing it from similar species: Few other wetland plants grow as tall, with odorless and numerous square or multisided stems, and spikes of brilliant purple flowers that turn into many small, oval pods.



3-9 ft. in height

flowers in a spike; closely attached to stem

5-6 petals per flower

stiff, four-sided, upright stem

opposite leaf arrangement



PURPLE Loosestrife



THE ECOLOGICAL PROBLEM

Purple loosestrife is an attractive wetland perennial plant from Europe and Asia that is listed in Wisconsin's Invasive Species Rule (NR40) as Restricted, meaning it cannot be sold or moved from place to place. It arrived in North America without the insects and diseases that kept it in check in its native lands. Once freed from its natural controls, purple loosestrife grows taller and faster than our native wetland plants. It was introduced in Wisconsin sometime after 1900. The growth advantages and prolific seed production allowed it to heavily populate many Wisconsin wetlands, sometimes to the near-total exclusion of native vegetation.

Once established, it significantly changes the ecological function of the wetlands. For example, other flowering plants that bloom at specific times throughout the spring and summer are lost to pollinators, leaving only purple loosestrife during the short window of its blooming. Purple loosestrife had spread rapidly in wetlands, along shorelines and in ditches in Wisconsin by the mid to late 1990s when biological control aka biocontrols were introduced. Often wet, inaccessible locations and the patch sizes made control by digging or chemical applications difficult and costly. The biocontrol species, *Galerucella* sp. beetles, readily move over inaccessible areas to help us manage the plants.

IDENTIFICATION AND MANAGEMENT IN WISCONSIN

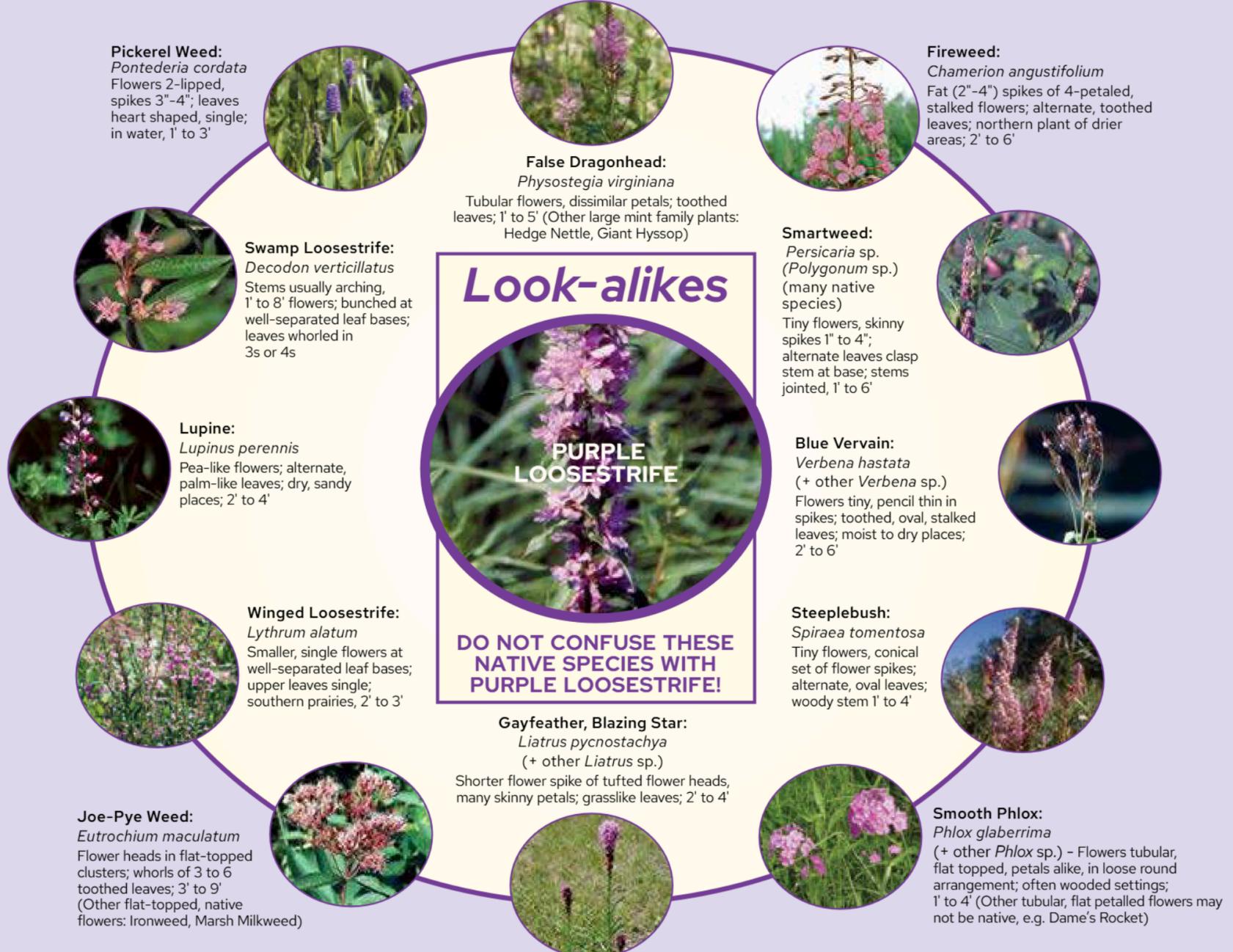
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Potential Impacts to Wetlands

- Plant diversity in wetlands declines dramatically, and many rare and endangered plants found in our remaining wetlands are threatened.
- Most wetland animals that depend on native plants for food and shelter decline significantly. Some species, such as Baltimore checkerspot butterflies, marsh wrens, and least bitterns may disappear entirely.
- Recreational uses of wetlands for hunting, trapping, fishing, bird watching and nature study decline. Thick growth of purple loosestrife may impede boat and foot travel.
- Wetlands may store and filter less water.



Photo credits: Dennis Woodland, Asa Thorenson, Clifford Orstead, Mary Melgard, Kitty Kohout, Paul Berry, Merel Black, Dan Woodland, Robert Beirman, Emmet Judziewicz, Jeffrey J. Strobel, and John Sullivan.





G. Calmariensis

A SOLUTION BASED ON ECOLOGY



G. Pusilla

After a years-long search for biological controls (insects that managed the plants in Europe), two *Galerucella* sp. beetles and two weevils were introduced to Wisconsin's purple loosestrife populations in the mid-1990s. Thanks to the work of countless volunteers and the staff of many organizations who rear and release the beetles each year, the beetles have naturalized across the state. There is also evidence that one of the weevil species has also naturalized, although people do not rear them intentionally. The beetles do not eliminate the plants. Instead, the beetles and their larvae feed throughout the plants' growing season, reducing plant growth and seed production. Native plants may return on their own or through re-introduction by people while the remaining purple loosestrife becomes just another player on the field which does have value to pollinators during its bloom season.

Biocontrol is most useful where plants are taller than waist height, there are too few or no beetles present, plants are on very large or difficult to fully access sites or where loosestrife seeds can be easily spread to new areas. Combining with other control methods will be necessary if the goal is maximum reduction or total removal. Understand, however, that some sites with purple loosestrife are valuable as refuges for continuing beetle populations. A state-wide goal of the biocontrol program since its start has been to disperse enough biocontrol beetles to establish viable populations. Well-managed purple loosestrife requires a sustainable population of beetles that, once established, does not require adding new beetles annually.

To rear the beetles, purple loosestrife plants are raised in pots or a large tent. Parent beetles collected in spring are added to the plants to eat, lay eggs and develop new beetles. Under good conditions, 10 parent beetles added to each rearing plant can result in 1000 new adults by mid-summer that will be released into area patches of purple loosestrife. There they will feed and disperse by late summer to overwinter. In spring, they emerge to be the parents of the next generation.

FOR MORE INFORMATION

To learn more, search "purple loosestrife biocontrol" at dnr.wi.gov.

To learn if you have a biocontrol program coordinator in your county, email DNRAISInfo@wisconsin.gov.

To report purple loosestrife patches, send photos and the specific location to species@wisconsin.gov.

HOW DOES PURPLE LOOSESTRIFE SPREAD?

Purple loosestrife spreads primarily by seed, but it can also establish from bits of root or stem fragments that readily root in moist soil. A mature, uncontrolled loosestrife plant annually produces over 2 million tiny seeds that may remain viable in the soil for many years. Water, animals (especially birds), boats, construction equipment and people can transport the seeds long distances. Also, some uninformed gardeners might still plant purple loosestrife.

All sunny wetlands, including temporarily moist fields and roadside ditches, are susceptible to purple loosestrife establishment. A new infestation usually starts with a few transported seeds that grow into pioneering plants. These plants can quickly build up a large seed bank in the soil. Disturbances such as water drawdowns accelerate the invasion by providing open substrate and sun for seed germination, and can help fill the wetland with loosestrife.

REDUCING THE SPREAD OF PURPLE LOOSESTRIFE

Purple loosestrife spread throughout North America through both accidental and intentional introductions. A healthy plant can reach 6-9' tall and drop over 2 million seeds annually that can be easily moved on footwear, animals and tires, and by spreading in water in wetlands, along ditches and shorelines of rivers and lakes. Once established, the woody roots can be difficult to fully remove. When dug out, if not properly disposed of, the plants may re-root.

Before leaving any natural area, use a brush to remove seeds and debris from footwear. This step is important for slowing the spread of many other invasive species, also.

If you have a small population on your property, it can be removed by digging. You can also cut plants down and treat the stumps with an herbicide (see Chemical Control). Pull small plants.

Do not purchase purple loosestrife or share it with others. If found for sale, report it to invasive.species@wisconsin.gov.

Disposal: Plants can be burned, but do not compost them. Contact your municipality to see if they allow invasive species in the regular trash in a plastic bag and labeled "Invasive Species Approved by DNR for Landfill" or if they have other options.

Let friends and neighbors with purple loosestrife know about the issues and what can be done.



As shown in the photos, biological control can be highly effective in controlling purple loosestrife.



Checking plants in a mass rearing cage, which can be used to raise 50,000-80,000 beetles. (Credit: J. Scherer)



A purple loosestrife plant being eaten by beetles and their larvae. (Credit: J. Scherer)



Traditional beetle rearing. (Credit: J. Scherer)



Winnebago beetles. (Credit: Lawanda Jungwirth)

OTHER CONTROL METHODS

CHEMICAL & MECHANICAL METHODS

Avoid soil disturbances that expose the loosestrife seed bank. Dry and burn or landfill removed plant parts; do not compost. Herbicides offer quick control, but rarely elimination, and may be impractical on large sites. Always follow up for missed plants and new seedlings. If working in wet or saturated areas, a WDNR Aquatic Plant Management permit is necessary. Visit the WDNR website and search APM Permits for more information. Obey all herbicide label instructions, and treat at onset of flowering (mid-late summer). Add a wetting agent. Herbicide choice depends on location (dry, or wet - requires wet formulations), applicator, and adjacent plants (most chemicals kill all plants). Imazapyr gives best control, but requires applicator certification (contractors). Glyphosate gives good control for landowners. Triclopyr is selective and will not kill grasses, sedges or cattails (Renovate® is a wet formulation). Seek local WDNR advice for best options!

1 Critical for preventing establishment: gently pull or dig young, small plants, if possible (before seeds set); especially easy in loose, sandy or gravelly soil. Be sure roots come out intact.

2 On small sites, landowners can apply glyphosate in 1-1.5% active ingredient (a.i.) solution to 1/2+ plant surfaces, or cut stems and apply 20-40% a.i. to the stumps. Use Roundup®/equivalent on drier sites, Rodeo®/equivalent over/near water. (Check labels for triclopyr rates, e.g., apply 1-1.5% Renovate 3® to all plant surfaces.) Clumps may be multiple plants, so treat all stems.

3 On large sites consider using a contractor. Plants will be sprayed with a selected herbicide, e.g., 8-16 fl. oz./acre imazapyr (e.g. Habitat®), 2-3 lb. a.e./acre glyphosate (e.g. Rodeo®), or 6-8 qt./acre triclopyr (e.g. Renovate 3®). Contractor acquires needed permit(s), but always be knowledgeable about your chosen herbicide.



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